

# Harold Swanberg, MD: Why and how EMWA should remember him

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## Abstract

Before the European Medical Writers Association (EMWA) and the American Medical Writers Association (AMWA), there was the Mississippi Valley Medical Editors Association (MVMEA). Most medical writers are unaware of the history of MVMEA and of how it turned into AMWA and EMWA. Here, I chronicle the life of Harold Swanberg, MD, who founded the MVMEA and, when it faltered, reinvented it as AMWA. The story begins shortly after the American Civil War, when medical journals were becoming more respected as sources of information and when editors began to be employed as paid, part- or full-time editors. It continues with the rise and fall of the MVMEA and its rebirth as AMWA. Swanberg's death coincided with the end of his vision for AMWA. However, the new vision for the association – and an international tragedy – allowed AMWA and EMWA to become key forces in developing modern medical writing as a profession.

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## Introduction

Many EMWA and AMWA members have heard of Dr Harold Swanberg, whose work led to the development of these associations, but the details of his life are not commonly known. In fact, his life is notable for several reasons.<sup>1</sup> He contributed to the fields of radiology, scientific publishing, medical writing, and chiropractic. He also established three educational foundations, started three journals, and founded five organizations, one only for physician editors of medical journals and one including non-physicians working in the field of scientific publication. And although he did not envision what AMWA and EMWA would become, he created the framework and enthusiasm that made both possible.<sup>2</sup>

## Personal life

William Harold Swanberg, BSc, MD, FACP, was born in Philadelphia in 1891 (Figure 1).<sup>3</sup> Details on his early and personal life are scant (*see box below*), but we do know that he was married twice. In 1919, he married Zoe Johnson, his office assistant at the time,<sup>3</sup> with whom he had a son, William H. Swanberg, Jr. With his second wife, Mildred W. Chapman, he raised her two daughters, as well as their own daughter, Nancy G. Swanberg. Nancy attended Francis Shimer junior college – at age 15 – and, after studying at the Sorbonne, received a degree in English from the University of Missouri in 1955, at age 20.<sup>4</sup> In the 1960s, she taught medical writing at Baylor College of Medicine and became an AMWA Fellow in 1963.<sup>4</sup>

## Early years

At age 19, Harold was working his way through medical school as an assistant in a histological laboratory when he became interested in “the claims of some of the cults of that period.”<sup>5</sup> The laboratory appears to have been that of Oakley G. Smith.<sup>6</sup> (Other sources describe Harold as being a student of Smith, which may be more self-serving than accurate.)<sup>7,8</sup> Smith himself was a protégé of Daniel David Palmer, the founder of



**Figure 1. William Harold Swanberg BSc, MD, FACP (1891–1970), founder of the Mississippi Valley Medical Editors Association and the American Medical Writers Association**

chiropractic. For whatever chiropractic has become, it originated from Palmer's pseudo-scientific beliefs about healing. Smith eventually split from Palmer in 1907 and founded naprapathy, which focuses on diet and on manipulating connective tissue rather than the spine.<sup>8</sup> Oakley Smith had been dissecting spines since 1905, in the interest of chiropractic theory, so Harold's work was undoubtedly related to Smith's investigations.<sup>8</sup>

In 1914, after 4 years of work and at age 23, Harold published *The Intervertebral Foramen: An Atlas and Histological Description of an Intervertebral Foramen and its Adjacent Parts* (Chicago Scientific Publishing; 1914). This book presented the first photomicrographs and scientific descriptions of the intervertebral foramen in cats.<sup>8</sup> The following year, he published *The Intervertebral Foramina in Man* (Chicago Scientific Publishing; 1915). These books definitively disproved the “stepping-on-the-hose”

theory of chiropractic, which was the metaphor for vertebral pressure impinging on nerve cells as the cause of disease.<sup>8,9</sup> Several legitimate medical journals gave the book good reviews. It was a standard work in chiropractic for decades<sup>10</sup> and it is still sold on alternative medicine websites.<sup>7</sup>

A year later, at age 25, Harold graduated from the Chicago College of Medicine and Surgery.<sup>11</sup>

### Professional years

In 1917, Harold enlisted in the Army Medical Corps, was commissioned as a First Lieutenant, and studied at the School of Military Roentgenology in Chicago. After leaving the military, he moved to Quincy, Illinois, a small city on the Mississippi River. In 1919, he opened the Quincy X-Ray and Radium Laboratories.<sup>3</sup>

Harold was instrumental in founding the Physicians and Surgeons Radium Association of Quincy in 1921.<sup>3</sup> A short 2 years later, he organised and was elected secretary of the Adams County Medical Society and served as the Society's librarian for 30 years. He also suggested that the Society publish a monthly bulletin.<sup>3</sup> The first issue of the *Adams County Medical*

*Society Bulletin* was published in 1923. Eventually, the name was changed to *The Quincy Medical Bulletin*, which was published until 1970 and, at its peak, was sent to hundreds of physicians.<sup>3</sup>

A year later, in 1924, Harold started another journal, *The Radiologic Review*, which became the *Mississippi Valley Medical Journal* in 1939. It became *Clinical Medicine* in 1960 and was published until 1978.<sup>3</sup>

Over the next several years, Harold invented and marketed an applicator for treating gynecological cancers with radiotherapy (Figure 2),<sup>12</sup> maintained a private practice, worked as a radiologist at both Quincy hospitals and some smaller area hospitals, took a graduate course at Harvard, and spent 6 months in graduate studies in Vienna.<sup>3</sup>

In 1932, he published his second book, *Radiologic Maxims*, a collection of sayings and platitudes about radiology.<sup>13</sup> The book was not well received.<sup>14,15</sup> He also published several articles on medical topics and several editorials on social policy (e.g., fluoridation of drinking water, Social Security), as well as on issues in medical writing. In 1935, he helped found the

Mississippi Valley Medical Society and was soon elected secretary-treasurer.

In 1940, he founded yet another association, the Mississippi Valley Medical Editors Association (MVMEA), targeted to the physician editors of state and regional medical journals "to raise standards and to improve the quality of medical writing".<sup>5</sup> To understand the association, how-

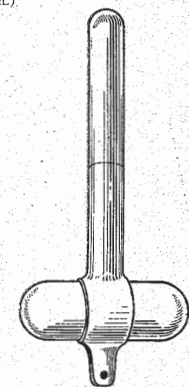
ever, and to avoid some historical confusion, we must go back to the end of the Civil War.

### The American Medical Editors Association

With some notable exceptions (e.g., *The New England Journal of Medicine*, founded in 1812; *JAMA*, founded in 1883), for most of the 1800s, "medical journalism" consisted of a handful of serious, society-sponsored journals (including those from state and local medical societies who would be served by the MVMEA); many non-society proprietary journals publishing more-or-less legitimate medical articles; and advertising-driven tabloids (today's "throw-aways"). Out of this environment, shortly after the Civil War, a group of journal editors formed the American Medical Editors Association (AMEA) to promote journal editing as a "distinct medical speciality".<sup>16,17</sup>

By the turn of the century, AMEA had hundreds of members nationwide, many with international reputations.<sup>18,19</sup> Several leading medical journals routinely published reports on the Association's annual meetings, policy papers, and presidential addresses.<sup>16</sup> During this period, for the first time, some journal editors became part- or full-time, paid professionals.<sup>16</sup> (A note to researchers: Between 1928 and 1932, an organisation similar to the AMEA,<sup>16</sup> or perhaps a continuation of it,<sup>19</sup> appeared: the American Medical Editors and Authors Association.)

The AMEA was formed at the 1869 meeting of the American Medical Association (AMA). One of the founders – and its first president – was Dr Nathan S. Davis, the founder of the AMA.<sup>19</sup> Over the years, however, the values of the AMEA and the AMA diverged. The AMEA criticised the business practices of AMA presidents George Simmons and his successor, Morris Fishbein, who between them directed (read: ruled) the association from 1889 to 1950.<sup>20</sup> (Both were



**Figure 2. The applicator Harold invented for treating gynecological cancers with radiotherapy**

While in Vienna doing graduate studies in radiology, Harold appears to have been introduced to the ideas of Dr Regaud of Paris (an associate of Madame Marie Curie). His applicator is compatible with Dr Regaud's pioneering approach to cancer treatment, which used comparatively small exposures to radium over longer periods.<sup>12</sup>

## MEDICAL MANUSCRIPT EDITING SERVICE

One of the principal [sic] objectives of the American Medical Writers' Association is "to help maintain and advance high standards of medical literature." To accomplish this, the English construction and composition of many medical manuscripts should be improved. Many authors of medical subjects would like to have their manuscripts corrected and clarified. This is a service which is available to all members and felows [sic] of the Association. Only manuscripts intended for medical journals or kindred publications from which the authors receive no fees and which do not exceed 5000 words, will be accepted. It is not a commercial service and does not concern itself with the selling of manuscripts, ghost writing or the compiling of bibliographies. There is a nominal charge for this service based on the number of words in the manuscript. (In counting words, count every word in the entire manuscript including title, headings, et.) as follows:

1000 words or less ..... \$500  
 Each additional 1000 words or fraction thereof..... \$5.00

**Between 1952 until at least 1965, AMWA ran a contract editing service for its members to "help maintain and advance high standards of medical literature".**

Harold proposed the service (of course). The first editor was Theodore Peterson, a doctoral student at the University of Illinois, who, after almost 6 years, had edited 600 manuscripts. (Given the spelling and other mistakes in the ad, such a program was, indeed, needed.)

association, Harold decided to create a new national organisation. He persuaded his friend, Morris Fishbein, to offer a 2-hour course on medical writing at the 1948 meeting. On September 29, 1948, the MVMEA was renamed the American Medical Writers Association (AMWA), "America's only association devoted to improvement of the written word of medicine".<sup>5</sup> Of course, Harold was the secretary/treasurer until 1960.<sup>1</sup> In addition to physician journal editors, the new association accepted as members "laymen connected with the editorial or business staff of medical periodicals, libraries, foundations, and publishing companies."<sup>5</sup>

In founding AMWA, Harold had several goals, most of which were met admirably during his life and some of which continue to drive AMWA's and EMWA's activities today.

- **Publish a bulletin.** When the MVMEA was renamed AMWA in 1948, it adopted the *Mississippi Valley Medical Journal* as its publication.<sup>5</sup> In 1951, the association also began to publish the *Quarterly Bulletin of the American Medical Writers Association*, which was published until 1985, at which time its name was changed to the *AMWA Journal*.<sup>25</sup>
- **Start regional chapters.** AMWA began with 42 members. Today, more than 4000 members are included in 16 North American chapters.<sup>26</sup> In 1992, the European Chapter became the European Medical Writers Association.
- **Bestow awards.** Early in its existence, AMWA established the Distinguished Service Award for "distinguished contributions to the medical literature or rendered unusual and distinguished service to the medical profession". The first recipient of the award was Harold himself, in 1952. The award is now the Harold Swanberg Distinguished Service Award, AMWA's highest award.<sup>26</sup>
- **Begin a manuscript editing service.** Between 1952 until at least 1965, AMWA ran a contract editing service for its members, to "help maintain and advance high standards of medical literature". Harold proposed the service (of course), which provided line-by-line critiques but did not do library research, compile bibliographies, or provide ghost-writing.<sup>5</sup>
- **Establish college degree programmes in medical writing.** In 1954, the University of Illinois and the University of Missouri (in conjunction with their respective medical schools) and later, the University of

eventually forced from office for deceptive business practices.)<sup>21</sup> The AMEA also advocated adding a medical officer to the president's cabinet (which led to the current position of the US Secretary of Health and Human Services),<sup>22</sup> an idea vigorously opposed by the AMA, which feared government intervention in healthcare.<sup>18,23</sup>

Years later, Harold would befriend Fishbein, who became an important AMWA member. But it is no accident that Fishbein disparages the AMEA as a predecessor to AMWA in the very first sentence of the Foreword of the *History of the American Medical Writers Association*: "When I first came into medicine and editing more than 50 years ago, I was confronted with the existence of the American Medical Editor's Association which I found was essentially a trade organisation designed to keep postage rates down, the quantity and costs of

advertising up, and not worrying too much about standards."<sup>25</sup> (Harold shared Fishbein's opinion.

However, one critic noted that Fishbein often "makes statements relative to the American Medical Editor's Association, that, to be kind to him, are more critical than correct".)<sup>24</sup>

That said, Fishbein was an ardent supporter of AMWA from the beginning and used his influence as "the voice of American physicians" to advance the association. He started the Chicago chapter, was president of the Association in 1958, and received the Distinguished Service Award in 1962.<sup>25</sup>

### Back to the MVMEA...

The MVMEA, founded in 1940, was short-lived. The War prevented meetings between 1942 and 1948, at which time the 42 remaining members were losing interest. To save the

When founding the Mississippi Valley Medical Editors Association, Harold Swanberg did not envision its evolution into AMWA and EMWA, but he did create the framework and enthusiasm that made both organisations possible.



Oklahoma, began offering a Bachelor of Science degree in Medical Journalism and Writing. However, the programmes did not do well. In his history of AMWA, Harold mentions only 11 students who enrolled in the programmes and only 2 who graduated.<sup>5</sup>

- **Exhibit at professional meetings.** In Harold's history of AMWA is a 1956 photo of him in front of a large exhibit at an AMWA recruiting booth (created by Harold, of course) at the World Medical Association conference in Havana, Cuba.<sup>5</sup> In a related project, AMWA published a small book titled *A Group of Papers on Medical Writing*.<sup>27</sup> The 11 chapters were written by distinguished AMWA members. An astounding 20,000 copies were published. The book is still relevant and is available for less than \$20.

### The end of an era: AMWA changes course

A heart attack ended Harold's medical career in 1959. He died 11 years later but not before publishing Volume I of a planned 2-volume history of the association in 1965.<sup>3</sup> (Volume II was never written.) He was also active in AMWA until his death, which coincided with the end of his vision for the association he created.

In the 1960s, the physician members of AMWA were retiring and were not being replaced. To keep the association solvent, the board decided to let non-physicians hold office, a practice Harold vehemently opposed. His last official act appears to have been casting the only vote against the change. The first non-physician president, Eric Martin, PhD, took office in 1970, the year Harold died.<sup>28</sup> Although AMWA survived by recruiting non-physicians and members who were not journal editors, by chance, it was also positioned to fill another, and arguably unmet, need of an emerging profession, especially after an international tragedy.

Dr Swanberg was active in AMWA until his death in 1970.

### The beginning of an era: The drug that changed everything

Thalidomide was a sedative widely used in Europe to treat morning sickness during pregnancy. In the 1960s, it was linked to fetal deaths and thousands of serious birth defects in newborns.<sup>29</sup> In the US at the time, drugs were tested only on rodents and did not have to be tested for teratogenic effects. Clinical trials were



### Quincy High School, which Swanberg generously supported throughout his professional life.

He founded the Society for Academic Achievement, which is “dedicated to motivate youth to achieve academic excellence” and that is still active; launched the Quincy Major Learning Programme, to help high school students enter and graduate from college; and was instrumental in establishing the first vocational guidance programme, including a full-time guidance counsellor.

not yet required for FDA approval, and any trials that were conducted were not subject to oversight.<sup>30</sup>

The thalidomide tragedy led to the 1962 amendments to the Federal Food, Drug, and Cosmetic Act, which required manufacturers to prove both safety and efficacy and greatly increased surveillance and monitoring of the drug-approval process. This tightening of regulations was global.<sup>30</sup>

The need to meet new and extensive domestic and international licensing requirements created great uncertainty among pharmaceutical companies. To address this uncertainty, 30 pharmaceutical professionals founded the Drug Information Association (DIA) in 1964.<sup>31</sup> One of the founders (perhaps *the* founder) and its first president was Dr Eric Martin of AMWA.<sup>32</sup>

As horrible as thalidomide was, it also probably saved AMWA. Eric became president of AMWA when the need for more complete and standardised regulatory documents greatly increased the demand for regulatory writers. At the same time, the fields of pharmaceutical

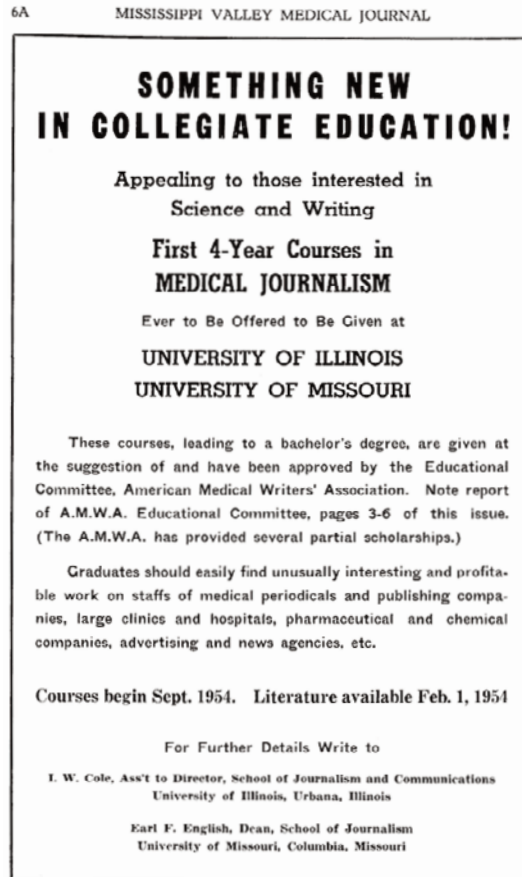
marketing, continuing medical education, and scientific publications also expanded and matured and required skilled medical writers and editors, all of which created a market for more professional training.

Eric and four others created much of AMWA as we know it today: Arnold Melnick, DO, Executive Vice Chancellor of Nova Southeastern University; Red Schiffrin, PhD, Vice President and head of Drug Regulatory Affairs at Hoffman-LaRoche (and widely regarded as an expert in drug approval); Bill Nelligan, the Executive Director of the American College of Cardiology, who (surreptitiously) donated space, clerical support, and the salary for an executive director for 2 years; and Lillian Sablack, AMWA's first executive director, who helped establish the annual meetings and brought order to the administrative functions. (Telephone conversation with Lillian Sablack, July 2020.)

The association began its “core curriculum” to train members as fulltime medical writers, essentially establishing modern medical writing as a profession.

### Odds and ends of Harold Swanberg's life

- In 1942, Harold founded the Swanberg Medical Foundation to “sponsor ... things of a charitable, scientific, literary or educational nature... which would bring public and professional honor and respect to the medical profession...”<sup>3</sup>
- He also founded the Society for Academic Achievement, which is “dedicated to motivate youth to achieve academic excellence”<sup>2</sup> and that is still active.<sup>3</sup>
- In 1956, Harold also developed and launched the Quincy Major Learning Program, to help high school students enter and graduate from college.<sup>1</sup>
- He was instrumental in establishing the first vocational guidance programme and a guidance counselor position at his local high school in Quincy, Illinois.<sup>1</sup>
- He created what might have been the first registry of freelance medical writers and editors, eventually expanded to include “salaried people”<sup>5</sup>
- In the McCarthy era of the 1950s, he was successful in amending the AMWA Constitution to exclude anyone in the Communist or Fascist parties from becoming members. The announcement was titled “Communists and Fascists Beware!”<sup>5</sup> (The amendment was removed a few years later.)



### The beginning of EMWA

In 1990, 14 medical writers from European pharmaceutical companies met to discuss forming a new organisation. In 1992, the European chapter of AMWA was formed, and in 1998, it became an independent association. EMWA now has more than 1000 members from more than 40 countries, 12 of which are outside Europe.<sup>33</sup>

These two organisations, AMWA and EMWA, have since become the preeminent associations for training professional medical writers and editors. In addition to their journals and professional development programmes, their members are the faculty at academic programmes in the field; trainers for employees in pharmaceutical companies, journals, and medical communications companies; and authors of hundreds of articles and books in the field.

And all of the above activities were set in motion by a remarkable physician from a small town on the Mississippi River who believed in the importance of good communication.

### Advertisement for the first academic programmes for medical writing in the US.

The programmes did not do well. Swanberg's History of AMWA mentions that only 11 students enrolled in the programmes and only 2 graduated. The US still has only 2 certificate programmes, one at University of Chicago (established in 1999) and one at the University of California, San Diego, Extension (established in 2016).

### Acknowledgements

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### Conflicts of interest

The author reports no competing interests related to this article.

### References

1. Harvey B. Harold Swanberg: How I wish I knew you! *AMWA J.* 34(1):18–23.
2. Lang T. William Harold Swanberg: Radiologist, organizer, philanthropist. *AMWA J.* 2022;37(4)46–51. doi:10.55752/amwa.2022.196
3. Dittmer A. Medical writing was a passion for longtime Quincy physician. *Herald WHIG.* 2019 Feb 24. Available from: <https://www.hsqa.org/medical-writing-was-a-passion-for-longtime-quincy-physician>
4. Obituary of Nancy Swanberg Bradshaw [cited 2020 Jun 4]. Available from: <https://www.legacy.com/us/obituaries/>

- whig/name/nancy-bradshaw-obituary?id=16709954
5. Swanberg H. History of the American Medical Writers Association Volume 1. Washington D.C.: American Medical Writers Association; 1966.
  6. A historical review [of naprapathy]. Lucky bodies and happy souls [cited 2020 Jul 30]. Available from: <http://www.luckybodies.com/en/naprapathy/naprapathy-history>
  7. AcupunctureProducts.com. 2018 [cited 2020 Jun 28]. Available from: [https://www.acupunctureproducts.com/intervertebral\\_foramen\\_in\\_man.html](https://www.acupunctureproducts.com/intervertebral_foramen_in_man.html).
  8. Senzon SA. The chiropractic vertebral subluxation part 3: complexity and identity from 1908 to 1915. *J Chiropr Humanit*. 2018;25:36–51. doi:10.1016/j.jechu.2018.10.003
  9. Swanberg H. Absence of bony pressure on nervous structures in man. *JAMA*. 1914;LXIII(18):1596. doi:10.1001/jama.1914.02570180082031
  10. The Chiropractic Institute. Salutogenesis, chiropractic, and medical research. 2020. Available from: <https://www.institutechiro.com/salutogenesis-chiropractic-and-medical-research/>.
  11. Batesel P. American College of Medicine and Surgery Chicago, Illinois, 1901–1917. In: America's lost colleges profiles of 345 closed or merged colleges. [cited 2020 Jul 30]. Available from: <https://www.lostcolleges.com/american-college-of-medicine-and-surgery>
  12. Swanberg H. A new radium applicator for carcinoma of the cervix. *JAMA*. 90(16):1289. doi:10.1001/jama.1928.92690430001011
  13. Swanberg H. Radiologic Maxims. Quincy, IL: Radiological Review Publishing Company; 1932.
  14. Radiologic Maxims. *Indian Med Gazette*. 1933 Jul;413–4.
  15. Radiologic Maxims. *Arch NeurPsych*. 1933;29(5):1177. doi:10.1001/archneurpsyc.1933.02240110245015
  16. Connor J. Fugitive Leaves. Medical journal editors unite. 2020. Available from: <https://histmed.collegeofphysicians.org/medical-journal-editors-unite/>
  17. Carney C. Biography of Henry W. Coe. In: History of Oregon illustrated Vol 2. Portland, OR: The Pioneer Historical Publishing Company Chicago; 1922.
  18. Harris S. The nation's greatest need: a national department of health. *Am J Pub Health*. 1920;10(8):633–6. doi:10.2105/ajph.10.8.633-a
  19. Palmer B. Report of the Commission of Journalism (St. Paul Convocation, Aug. 4, 1934). *J Am Coll Dent*. 1935;2(2–3):120–52. doi:10.14219/jada.archive.1935.0338
  20. Ullman D. How the AMA got rich & powerful: "The AMA's Seal of Approval". 2014 Nov 10. Available from: [https://www.huffpost.com/entry/how-the-ama-got-rich-powe\\_b\\_6103720](https://www.huffpost.com/entry/how-the-ama-got-rich-powe_b_6103720)
  21. Fang L. A symbiotic relationship – The AMA and the for-profit health lobby. *ThinkProgress* 2009 [cited 2020 Jul 3]. Available from: <https://archive.thinkprogress.org/a-symbiotic-relationship-the-ama-and-the-for-profit-health-lobby-a98e7148ad1e/>
  22. A medical officer in the President's cabinet. *J Natl Med Assoc*. 1928;20(4):194–5.
  23. Millenson M. Medicare, fair pay, and the AMA: the forgotten history. 2015 Sep 10; Available from: <https://www.healthaffairs.org/doi/10.1377/hblog20150910.050461/full/>
  24. Medical organizations old and new. *Mississippi Doctor*. 1931;9(1):12. Available from: [https://archive.org/stream/mississippidoc-to9193unse/mississippidoc-to9193unse\\_djvu.txt](https://archive.org/stream/mississippidoc-to9193unse/mississippidoc-to9193unse_djvu.txt)
  25. Schiffrin M. A history of the AMWA Journal. *AMWAJ*. 2000;15(3):11–22.
  26. American Medical Writers Association. Available from: <https://www.amwa.org>
  27. Gray J, editor. A group of papers on medical writing. Detroit: Parke, Davis & Company; 1957.
  28. Lang T. Eric Wentworth Martin: Pharmacist, researcher, author. *AMWAJ*. 2022;37(3):28–31. doi:10.55752/amwa.2022.168
  29. Fintel B, Samaras A, Carias E. The Thalidomide tragedy: lessons for drug safety and regulation. *HELIX Magazine* [cited 2009 Jul 28.] Available from: <https://vaccinesafety.info/2021/08/26/the-thalidomide-tragedy-lessons-for-drug-safety-and-regulation-helix-magazine/>
  30. US FDA. Kefauver-Harris Amendments revolutionized drug development. [cited 2020 Jul 4]. Available from: [https://www.gvsu.edu/cms4/asset/F51281F0-00AF-E25A-5BF632E8D4A243C7/kefauver-harris\\_amendments.fda.thalidomide.pdf](https://www.gvsu.edu/cms4/asset/F51281F0-00AF-E25A-5BF632E8D4A243C7/kefauver-harris_amendments.fda.thalidomide.pdf)
  31. Reilly M. Drug information: Literature review of needs, resources, and services. Bethesda, MD: American Society of Hospital Pharmacists, Research and Education Foundation; 1972.
  32. Melnick A. Melnick on writing: An Anthology of columns from the American Medical Writers Association Journal. Bloomington, IN: Authorhouse; 2012.
  33. About EMWA [cited 2022 Oct 13]. Available from: <https://www.emwa.org/about-us/about-emwa>



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